T. Buck Construction, Inc.
249 Merrow Road, Auburn, Maine 04210-8319
*(207) 783-6223 * (FAX) 783-3970*

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ER BHF 013-1(16)

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ERECTION PLAN
Structural Steel
Vermont Agency of Transportation

Vermont Agency of Transportation
Bridge rehabilitation in the town of Jamaica, VT
ER BHF 013-1(16)

June 14, 2013

Introduction

This plan is intended to describe how T Buck Construction will erect the structural steel which is supplied by Casco Bay Steel. The steel will be erected and completed by Burt Crane& Rigging (aka Scheib Corp).
The girders will be erected beginning July 2nd and continue on July 3rd. the "C" girders should be erected on July 5th and the bolts will be torque as soon as practicable.

Details on Site

The steel will be set from two separate locations. The first setup will be located on Smith Road (CL1 on the sketch). There will be a small amount of fill needed near the top of slope and T Buck will protected the completed Type IV stone by covering it with fabric prior to the placement of any fill. The crane will be set up and utilized during the day and at taken down and out riggers retracted at night.
Once the "B" and the "A" girders are installed, the crane will move to the other side of the river and setup near Abutment 2 (CL2). From this location the "C" girders will be installed.

Details on Crane

The crane is owned and operated by BURT CRANE. It is a 250 ton crane when it is fully dressed. See the detailed site plan for specific details for each pick at each location.

Details on Steel

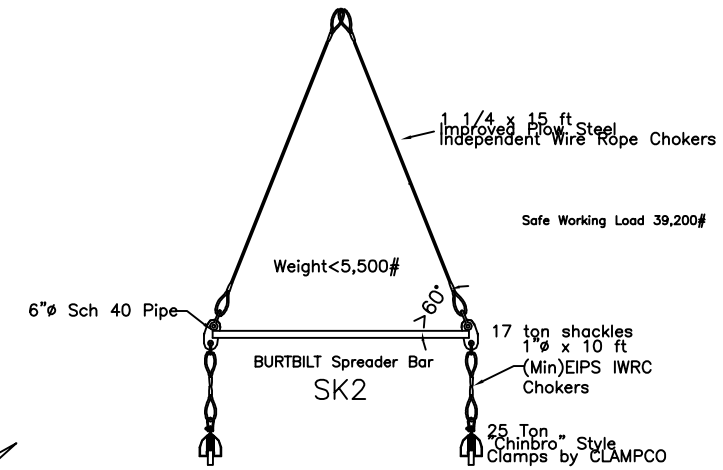
The steel will come in 12 separate pieces which will end up being 4 girder lines with 3 pieces per line. The middle section ("B") will be the most critical as the clearance for the rebar that is installed through the girders must have sufficient clearance on each face of the pier cap. The ends at each abutment will be set and the anchor bolts will be drilled and secured using an approved product.

APPENDIX A

Sketch of Site
Rigging Details

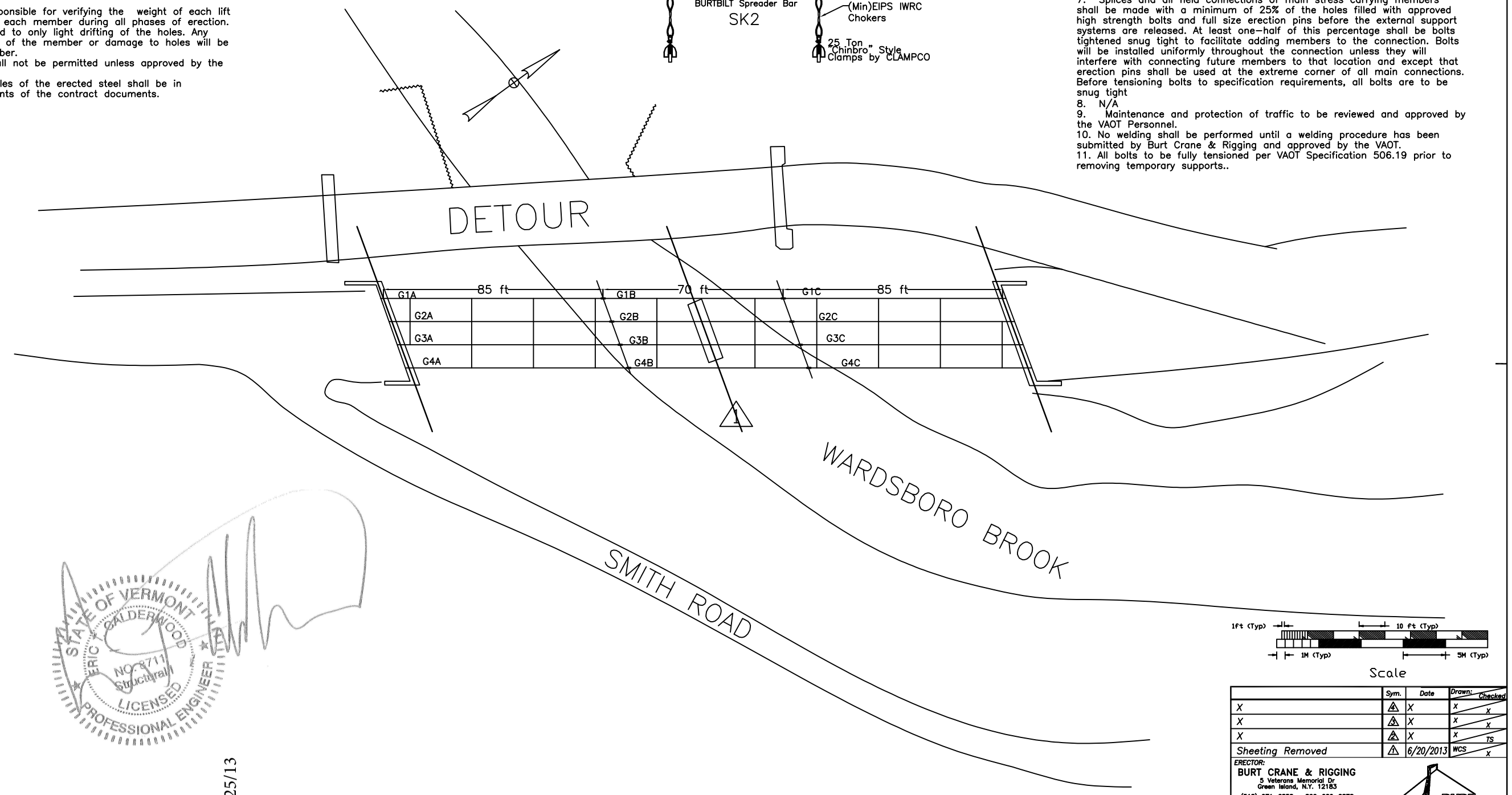
NOTES

1. No crane will be operated in a manner that will exceed its rated capacity at any radius as specified by the crane manufacturer.
2. If any, Unless electrical distribution and transmission lines are de–energized and visibly grounded at the point of work, or unless insulating barriers not a part of or attached to the crane have been erected to prevent physical contact with lines, cranes may be operated near power lines only in accordance with the following:
A. For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet (3.05 m);
B. For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be either 10 feet (3.05 m) plus 0.4 inch (10.16 mm) for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than 10 feet; and in transit with no load and boom lowered, the clearance shall be a minimum of 4 feet (1.22 m).
C. Determination of energized lines. Any overhead line shall be presumed to be energized until the owner of the line indicates that it is not energized.
3. The table or chart prepared by the crane manufacturer to describe the maximum lift at all conditions of loading shall be posted in each crane cab in clear view of the operator.
4. The contractor shall be responsible for verifying the weight of each lift and for insuring the stability of each member during all phases of erection.
5. Members shall be subjected to only light drifting of the holes. Any drifting that results in distortion of the member or damage to holes will be cause for rejection of the member.
6. Field reaming of holes shall not be permitted unless approved by the VAOT.
7. The final alignment and profiles of the erected steel shall be in conformance with the requirements of the contract documents.



INFORMATION (Referred to as IN# in Procedure)

1. Cranes specified in Erection Procedure.
2. All radii shown are boom point to center of crane rotation
3. Bracing and stringers will be installed as erection progresses. The number and location needed to insure stability are spelled out in the erection procedure on this drawing.
4. Between pieces erected, each connection will be made with a minimum of two approved high strength bolts at each connection unless a greater number is required for alignment and stability. The bolts shall be tightened until there is no gap between the connected parts (snug tight).
5. If surfaces which are to be connected by field bolting or field welding have been painted or become rusted or contaminated with any foreign material that would make these connecting procedures unacceptable, the contractor shall clean the surfaces at no additional cost to the State. A tight coating of light rust will be permitted on faying surfaces of bolted joints. No rust will be permitted at the fusion boundaries of groove welds.
6. Erection bolts shall be the same nominal diameter and shall conform to the same specification as the final bolts. Cylindrical erection pins shall be the same size as the hole. Full size erection pins shall be installed at the extreme corners of the connection.
7. Splices and all field connections of main stress carrying members shall be made with a minimum of 25% of the holes filled with approved high strength bolts and full size erection pins before the external support systems are released. At least one–half of this percentage shall be bolts tightened snug tight to facilitate adding members to the connection. Bolts will be installed uniformly throughout the connection unless they will interfere with connecting future members to that location and except that erection pins shall be used at the extreme corner of all main connections. Before tensioning bolts to specification requirements, all bolts are to be snug tight
8. N/A
9. Maintenance and protection of traffic to be reviewed and approved by the VAOT Personnel.
10. No welding shall be performed until a welding procedure has been submitted by Burt Crane & Rigging and approved by the VAOT.
11. All bolts to be fully tensioned per VAOT Specification 506.19 prior to removing temporary supports..



6/25/13

Scale

	Sym.	Date	Drawn: / Checked
X	4	X	X / X
X	3	X	X / X
X	2	X	X / TS
Sheeting Removed	1	6/20/2013	WCS / X

ERECTOR:
BURT CRANE & RIGGING
5 Veterans Memorial Dr
Green Island, N.Y. 12183
(518) 271–6858 800–282–2878
FAX (518) 271–6938
EMAIL: INFO@BURTCRANE.COM
HTTP://WWW.BURTCRANE.COM
BURT crane & rigging Beginnings in 1870

CONTRACTOR: T. BUCK CONSTRUCTION, INC.

CONTRACT #/LOCATION:
ER–BRF 013–1(6) WINDHAM COUNTY
VT ROUTE 100 OVER WARDSBORO BROOK

DRAWN BY: WCS
CHECKED BY: TS

SCALE: Per Scale Bar
BCR #: B110507
DATE: 5/25/2013
FABRICATORS #: 529–1
DRAWING NO. EPGN

TITLE OF DRAWING:
STRUCTURAL STEEL ERECTION PLAN

Bridge Number 79

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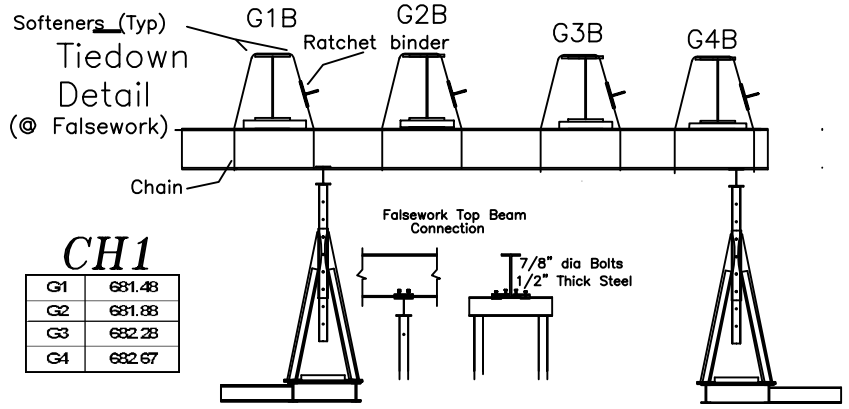
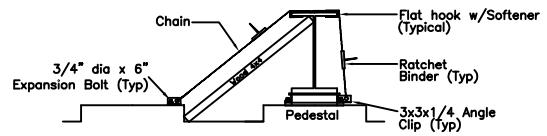
JOB FAX: X.....
EIC PHONE: X.....
FAB PHONE: X.....

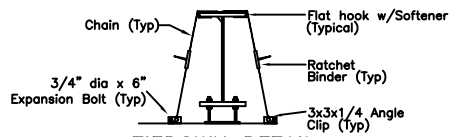


CH1

G1	681.48
G2	681.88
G3	682.28
G4	682.67



TIEDOWN DETAIL AT PIER SK3



TIEDOWN DETAIL AT ABUTMENT SK4

Crane @CL1

Crane 15
Faun Model ATF220G-5
Hydraulic All Terrain Crane
71 Mton Counterweight
Boom Length 139 Feet,
Sections I-V Extended 46% VI 92%
Fully Extended Outriggers
360 Degrees F.S.=1.18

Radius (M)	Capacity (Kg)	Radius (Feet)	Capacity (Pounds)
6.1	31,470	20	69,400
7.6	31,470	25	69,400
9.1	31,430	30	69,300
10.7	30,110	35	66,400
12.2	28,260	40	62,300
13.7	27,030	45	59,600
15.2	25,490	50	56,200
16.8	23,990	55	52,900
18.3	22,680	60	50,000
19.8	21,640	65	47,500
21.3	20,460	70	45,100
22.9	19,500	75	43,000
24.4	18,680	80	41,200
25.9	17,960	85	39,600
27.4	17,230	90	38,000
29.0	16,600	95	36,600
30.5	16,010	100	35,300
33.5	14,970	110	33,000
36.6	13,200	120	29,100

11571MT139ft46464646382

Crane @CL2

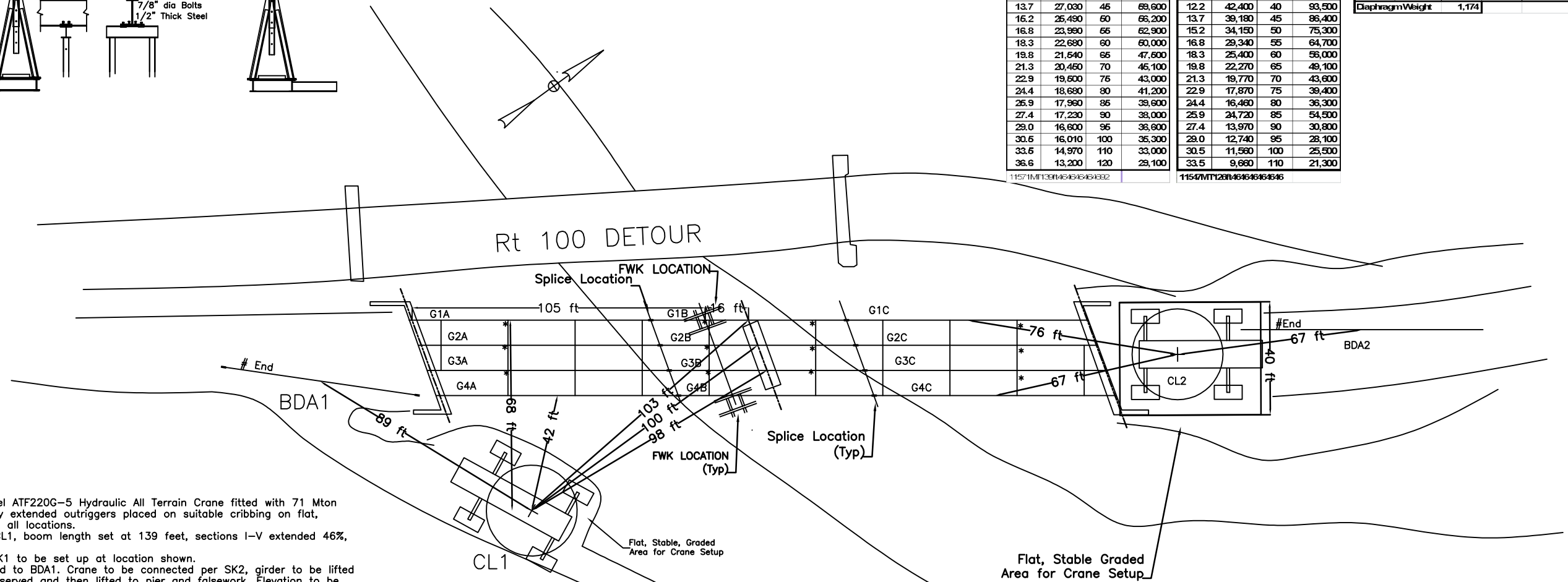
Crane 15
Faun Model ATF220G-5
Hydraulic All Terrain Crane
47 Mton Counterweight
Boom Length 126 Feet,
All Sections Extended 46%
Fully Extended Outriggers
360 Degrees F.S.=1.18

Radius (M)	Capacity (Kg)	Radius (Feet)	Capacity (Pounds)
5.5	43,490	18	95,900
6.1	43,490	20	95,900
7.6	43,490	25	95,900
9.1	43,490	30	95,900
10.7	43,490	35	95,900
12.2	42,400	40	93,500
13.7	39,180	45	86,400
15.2	34,150	50	75,300
16.8	29,340	55	64,700
18.3	25,400	60	56,000
19.8	22,270	65	49,100
21.3	19,770	70	43,600
22.9	17,870	75	39,400
24.4	16,460	80	36,300
25.9	24,720	85	54,500
27.4	13,970	90	30,800
29.0	12,740	95	28,100
30.5	11,580	100	25,500
33.5	9,660	110	21,300

11547MT126ft46464646846

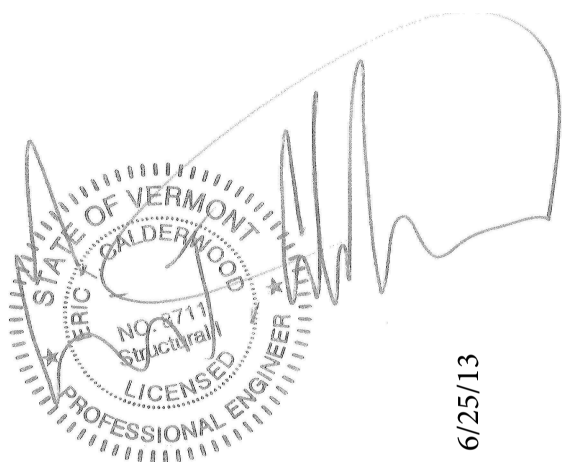
Chart of Weights

Piece Mark	Piece Weight (Pounds)	Weight on Crane 15 incl Rigging (Pounds)	Crane Radius Setting Girders	Chart Capacity of Crane 15 at Maximum Radius (Pounds)	Actual Factor of Safety
G1A	22,988	28,488	68	45,100	1.86
G2A	23,124	30,972	<88	>45,100	>1.86
G3A	23,080	30,988	<88	>45,100	>1.86
G4A	22,954	30,802	42	>58,600	>1.86
G1B	26,336	31,836	103	33,000	1.22
G2B	26,400	34,248	100	35,300	1.21
G3B	26,400	34,248	98	35,300	>1.21
G4B	26,336	31,836	<98	>35,300	>1.21
G1C	22,942	30,790	76	36,300	1.39
G2C	23,076	30,924	72	39,400	1.50
G3C	23,110	30,958	<72	>41,200	>1.50
G4C	22,976	28,476	67	43,600	1.80
Diaphragm Weight		1,174			



ERECTION PROCEDURE

1. Crane to be a Faun Model ATF220G-5 Hydraulic All Terrain Crane fitted with 71 Mton counterweight set up on fully extended outriggers placed on suitable cribbing on flat, stable, compacted ground at all locations.
2. Crane to be located at CL1, boom length set at 139 feet, sections I-V extended 46%, VI 92%.
3. Falsework as shown in SK1 to be set up at location shown.
4. Girder G4B to be delivered to BDA1. Crane to be connected per SK2, girder to be lifted to daylight as stability is observed and then lifted to pier and falsework. Elevation to be set per CH1. Girder to be tied down per SK3. Stability observed and crane disconnected.
4. Diaphragms noted thus * to be connected to the east side of G3B at BDA1. G3B to be lifted and set using the same procedure as that used to set G4B with the exception that the diaphragms noted thus * are to be connected per IN4 in lieu of tiedown at the pier.
5. G4A to be delivered to BDA1. crane connected per SK2 and G4A to be lifted and moved to splice to G4B and abutment. Splice to be connected per IN7 and girder to be tied down at abutment per SK4.
6. Diaphragm noted thus * to be connected to the east side of G3A at BDA1. Crane to be connected per SK2 and G3A to be lifted and moved to splice to G3B and abutment. Splice to be connected per IN7, diaphragm noted thus * to be connected per IN4, stability observed and crane disconnected.
7. Girder G2B to be delivered to BDA1. Diaphragms noted thus * to be connected to the east side of G2B and crane to be connected per SK2, girder to be lifted to daylight as stability is observed and then lifted to pier and falsework. Elevation to be set per CH1. Diaphragms noted thus * to be connected per IN4, stability observed and crane disconnected.
8. G1B to be delivered, lifted lifted and set using the same procedure as that used to set G2B with the exception that no diaphragms will be connected at BDA1.
9. Girders G2A and G1A to be delivered to BDA1 and set, in that order, using the same procedure as that used to set G3A with the exception that no diaphragm will be connected to G1A at BDA1.
10. Crane to be moved and set up at CL2 with 47 Mton Counterweight and boom Length 126 feet, all sections extended 46%.
11. G1C to be delivered to BDA2, crane connected per SK2 and G1C to be lifted and moved to splice to G1B and abutment. Splice to be connected per IN7 and girder to be tied down at abutment per SK4.
12. Diaphragms noted thus * to be connected to the west side of G2C at BDA2. Crane to be connected per SK2 and G2C to be lifted and moved to splice to G2B and abutment. Diaphragm noted thus * to be connected per IN4, splice to be connected per IN7, stability observed and crane disconnected.
13. Girders G3C and G4C to be delivered to BDA2 and set using the same procedure as that used to set G2C with the exception that no diaphragm will be connected to G4C at BDA2.
14. All remaining diaphragms and bolts to be installed and tensioned to specification requirements section 506.19(c) prior to the removal of temporary supports per section 506.19(b).



6/25/13

1ft (Typ) 10 ft (Typ)
1M (Typ) 5M (Typ)
Scale

	Sym.	Date	Drawn: / Checked
X	3	X	X / X
X	2	X	X / X
X	1	X	X / X
Revised Erection Sequence	1	6/21/2013	WCS / X

ERECTOR:
BURT CRANE & RIGGING
5 Veterans Memorial Dr
Green Island, N.Y. 12183
(518) 271-6858 800-282-2878
FAX (518) 271-6938
EMAIL: INFO@BURTCRANE.COM
HTTP://WWW.BURTCRANE.COM
Beginnings in 1870
BURT crane & rigging

CONTRACTOR: T. BUCK CONSTRUCTION, INC.

JOB PHONE: X.....
JOB FAX: X.....
EIC PHONE: X.....
FAB PHONE: X.....

CONTRACT #/LOCATION: ER-BRF 013-1(6) WINDHAM COUNTY VT ROUTE 100 OVER WARDSBORO BROOK

DRAWN BY: WCS

CHECKED BY: TS

SCALE: Per Scale Bar | BCR #: B110507

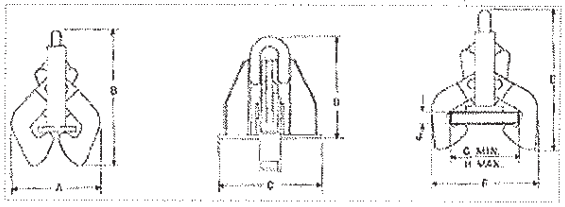
DATE: 5/25/2013 | FABRICATORS #: 529-1

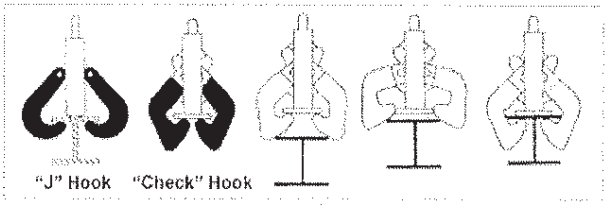
DRAWING NO. EP1

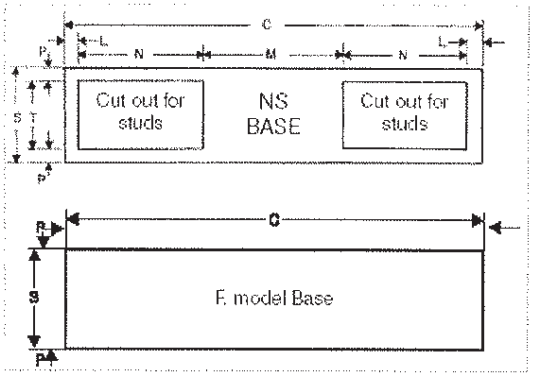
TITLE OF DRAWING: STRUCTURAL STEEL ERECTION PLAN

Bridge Number 79

Clamp-Co Inc. Pipe Grabs and Beam Clamps have been in continuous production for over 20 years. Their time-tested design and cost-effective performance have been repeatedly proven in steel erection, bridge construction, oil field and pipeline projects and other on-site and in-plant material handling applications. At "Clamp-Co" lifting devices are our only business and we take great pride in the manufacture and utility of our products. All load bearing components are manufactured from high strength, abrasion resistant or fatigue-proof steel alloys and each clamp or grab is individually assembled on dedicated tooling and tested to assure fit and conformance to our performance specifications. In addition to the standard units offered in this catalogue we also build modified units for special applications and offer factory rebuilding and recertification services for all of our clamps. We will inspect, rebuild and recertify your worn or damaged "Clamp-Co", beam clamps on original factory tooling at a substantial savings over new replacement.







"J" Hook Standard on 5,25,35,55 Ton NS+F models

"Check" Hook Standard
On F-15 and NS-15 models only

"J" Hook available on 15 Ton models.
Call for specs & limitations (Phone# 207-345-9818)

NS models have a recessed base plate to accept studs welded to beam surface.

Model No.	Working Load Limit Tons	FlangeGrip Width Range Min. Max.	Flange Thickness Range	Wt. Lbs.	Dimensions A	B	C	D	E	F	G	H
F-5	5	4 to 10	½ -1	70	9 1/2	26	12	20	25 1/2	16	3/4	4
F-15	15	7 to 17	½ -2	153	15 1/2	34	17	27	34 1/2	25	7	17
NS-15	15	7 to 17	½ -2	153	15 1/2	34	17	27	34 1/2	25	7	17
F-25	25	16 to 24	1-3	290	23	48	22 1/4	36	53	37 1/4	16	24
NS-25	25	16 to 24	1-3	290	23	48	22 1/4	36	53	37 1/4	16	24
F-35	35	16 to 36	1 5/8 -4	519	30	64	27 1/2	48	58	53	16	36
NS-35	35	16 to 36	1 5/8 -4	519	30	64	27 1/2	48	58	53	16	36

Model Number	NS Base, Dimensions Inches S	C	N	T	M	L	P
NS-15	4	16 1/2	4 1/2	2 1/2	6 1/2	1/2	3/4
NS-25	5 1/2	22 1/4	6 1/2	4	7 3/4	3/4	3/4
NS-35	6	27 1/2	8 1/2	4 1/2	9	3/4	3/4

Model Number	F-model Base Dimensions, Inches S	C	N	T	M	L	P
F-15	4	16 1/2					3/4
F-25	5 1/2	22 1/4	N/A	N/A	N/A	N/A	3/4
F-35	6	27 1/2					3/4

Crosby® Screw Pin Shackles

Load Rated® Fatigue Rated® "QT" QUENCHED & TEMPERED QUIC-CHECK® MAXTOUGH® "TA" TYPE APPROVED

SCREW PIN ANCHOR SHACKLES

G-209 S-209

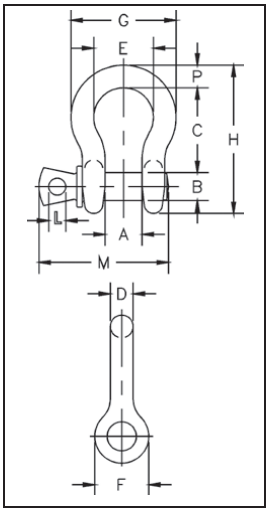
Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 2, except for those provisions required of the contractor. For additional information, see page 391.

- Capacities 1/3 thru 55 metric tons.
- Forged - Quenched and Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Hot Dip galvanized or Self Colored.
- Fatigue rated.
- Shackles 25t and larger are **RFID EQUIPPED.**
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Shackles are Quenched and Tempered and can meet DNV impact requirements of 42 joules at -20 C.
- Crosby products meet or exceed all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, Crosby products meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Look for the Red Pin® . . . the mark of genuine Crosby quality.
- Type Approval and certification in accordance with ABS 2006 Steel Vessel Rules 1-1-17.7, and ABS Guide for Certification of Cranes.

SCREW PIN CHAIN SHACKLES

G-210 S-210

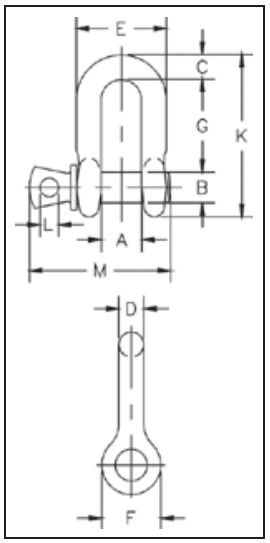
Screw pin chain shackles meet the performance requirements of Federal Specification RR-C-271D, Type IVB, Grade A, Class 2, except for those provisions required of the contractor. For additional information, see page 391.



G-209 S-209

Nominal Size (in.)	Working Load Limit (t)*	Stock No.		Weight Each (lbs.)	Dimensions (in.)											Tolerance + / -	
		G-209	S-209		A	B	C	D	E	F	G	H	L	M	P	C	A
3/16	1/3	1018357	-	.06	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.14	.19	.06	.06
1/4	1/2	1018375	1018384	.10	.47	.31	1.13	.25	.78	.61	1.28	1.84	.19	1.43	.25	.06	.06
5/16	3/4	1018393	1018400	.19	.53	.38	1.22	.31	.84	.75	1.47	2.09	.22	1.71	.31	.06	.06
3/8	1	1018419	1018428	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.02	.38	.13	.06
7/16	1-1/2	1018437	1018446	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.37	.44	.13	.06
1/2	2	1018455	1018464	.72	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3-1/4	1018473	1018482	1.37	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	4-3/4	1018491	1018507	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	6-1/2	1018516	1018525	3.62	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	.97	.25	.06
1	8-1/2	1018534	1018543	5.03	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.13	1.06	.25	.06
1-1/8	9-1/2	1018552	1018561	7.41	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.71	1.25	.25	.06
1-1/4	12	1018570	1018589	9.50	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.25	1.38	.25	.06
1-3/8	13-1/2	1018598	1018605	13.53	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.83	1.50	.25	.13
1-1/2	17	1018614	1018623	17.20	2.38	1.63	5.75	1.54	3.88	3.63	6.88	10.00	.81	7.33	1.62	.25	.13
1-3/4	25	1018632	1018641	27.78	2.88	2.00	7.00	1.84	5.00	4.19	8.86	12.34	1.00	9.06	2.25	.25	.13
2	35	1018650	1018669	45.00	3.25	2.25	7.75	2.08	5.75	4.81	9.97	13.68	1.22	10.35	2.40	.25	.13
2-1/2	55	1018678	1018687	85.75	4.13	2.75	10.50	2.71	7.25	5.69	12.87	17.84	1.38	13.00	3.13	.25	.25

* NOTE: Maximum Proof Load is 2.0 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see page 74.



G-210 S-210

Nominal Size (in.)	Working Load Limit (t)*	Stock No.		Weight Each (lbs.)	Dimensions (in.)										Tolerance +/-	
		G-210	S-210		A	B	C	D	E	F	G	K	L	M	G	A
1/4	1/2	1019150	1019169	.11	.47	.31	.25	.25	.97	.62	.97	1.59	.19	1.43	.06	.06
5/16	3/4	1019178	1019187	.17	.53	.38	.31	.31	1.15	.75	1.07	1.91	.22	1.71	.06	.06
3/8	1	1019196	1019203	.28	.66	.44	.38	.38	1.42	.92	1.28	2.31	.25	2.02	.13	.06
7/16	1-1/2	1019212	1019221	.43	.75	.50	.44	.44	1.63	1.06	1.48	2.67	.31	2.37	.13	.06
1/2	2	1019230	1019249	.59	.81	.63	.50	.50	1.81	1.18	1.66	3.03	.38	2.69	.13	.06
5/8	3-1/4	1019258	1019267	1.25	1.06	.75	.63	.63	2.32	1.50	2.04	3.76	.44	3.34	.13	.06
3/4	4-3/4	1019276	1019285	2.63	1.25	.88	.81	.75	2.75	1.81	2.40	4.53	.50	3.97	.25	.06
7/8	6-1/2	1019294	1019301	3.16	1.44	1.00	.97	.88	3.20	2.10	2.86	5.33	.50	4.50	.25	.06
1	8-1/2	1019310	1019329	4.75	1.69	1.13	1.00	1.00	3.69	2.38	3.24	5.94	.56	5.13	.25	.06
1-1/8	9-1/2	1019338	1019347	6.75	1.81	1.25	1.25	1.13	4.07	2.69	3.61	6.78	.63	5.71	.25	.06
1-1/4	12	1019356	1019365	9.06	2.03	1.38	1.38	1.25	4.53	3.00	3.97	7.50	.69	6.25	.25	.13
1-3/8	13-1/2	1019374	1019383	11.63	2.25	1.50	1.50	1.38	5.01	3.31	4.43	8.28	.75	6.83	.25	.13
1-1/2	17	1019392	1019409	15.95	2.38	1.63	1.62	1.50	5.38	3.62	4.84	9.05	.81	7.33	.25	.13
1-3/4	25	1019418	1019427	26.75	2.88	2.00	2.12	1.75	6.38	4.19	5.78	10.97	1.00	9.06	.25	.13
2	35	1019436	1019445	42.31	3.25	2.25	2.36	2.10	7.25	5.00	6.77	12.74	1.13	10.35	.25	.13
2-1/2	55	1019454	1019463	71.75	4.12	2.75	2.63	2.63	9.38	5.68	8.07	14.85	1.38	13.00	.25	.25

* NOTE: Maximum Proof Load is 2.0 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see page 74.

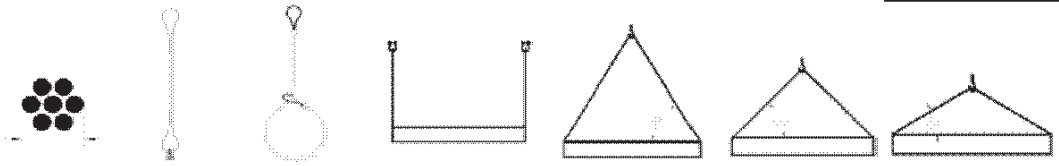
Utility Rigging Charts

BURT crane & rigging
Beginnings in 1870

Wire Rope Slings

Eye & Eye 6 x 19 x 6 x 37 - IWRC

ANSI B30.9 -
Design factor 5/1
Rated Capacity (lbs.)

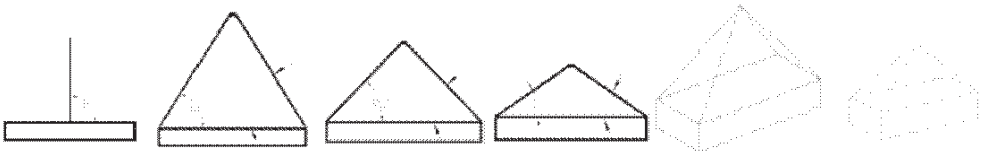


Rope Dia.	Vertical	Choker	Vertical Basket	2 Leg Bridle		
1/4"	1,300	960	2,600	2,200	1,820	1,300
3/8"	2,800	2,200	5,800	5,000	4,000	2,800
1/2"	5,000	3,800	10,200	88,000	7,200	5,000
5/8"	7,800	5,800	15,600	13,600	11,000	7,800
3/4"	11,200	8,200	22,000	19,400	15,800	11,200
7/8"	15,200	11,200	30,000	26,000	22,000	15,200
1"	19,600	14,400	40,000	34,000	28,000	19,600
1-1/8"	24,000	18,200	48,000	42,000	34,000	24,000
1-1/4"	30,000	22,000	60,000	52,000	42,000	30,000
1-1/2"	42,000	32,000	84,000	74,000	60,000	42,000

Chain Slings

Grade 80 Alloy Steel

ANSI B30.9 -
Design factor 5/1
Rated Capacity (lbs.)



Size of Chain			Double Chain Slings			Triple & Quad	Chain Slings
(in)	(mm)	Single	60°	45°	30°	60°	45°
9/32"	7	3500	6,100	4,900	3,500	9,100	7,400
3/8"	10	7100	12,300	10,000	7,100	18,400	15,100
1/2"	13	12000	20,800	17,000	12,000	31,200	25,500
5/8"	16	18100	31,300	25,600	18,100	47,000	38,400
3/4"	20	28300	49,000	40,000	28,300	73,500	60,000
7/8"	22	34200	59,200	48,400	34,200	88,900	72,500
1"	26	47700	82,600	67,400	47,700	123,900	101,200
1-1/4"	32	72300	125,200	102,200	72,300	187,800	153,400

Counterweight 156,527 lbs

Working Radius (ft)	Lifting capacities in 1,000 lbs according per SAE J765 on telescopic boom On outriggers, 360° working area **Outrigger base 27.23 ft** Boom length (ft)																				Working Radius (ft)
	139.4		139.4		139.4		139.4		153.2		153.2		153.2		167.0		167.0		167.0		
	° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		
8																					8
9																					9
10																					10
12																					12
14																					14
16																					16
18																					18
20	82	95.9	82	82.9	82	69.4	82	56.2													20
25	79	95.9	79	82.9	79	69.4	79	56.2	80	76.1	80	55.8	80	47.2							25
30	78	95.0	78	82.9	78	69.3	78	55.1	79	76.1	79	55.6	79	47.2	80	62.8	80	49.8	80	41.7	30
35	76	88.3	76	82.9	76	66.4	76	52.5	77	75.5	77	52.8	77	47.2	78	62.8	78	49.8	78	41.7	35
40	74	82.4	74	82.5	74	62.3	74	49.1	76	71.3	76	50.0	76	47.0	77	62.1	77	49.6	77	41.7	40
45	71	78.4	71	79.1	71	59.6	71	45.3	73	67.0	73	47.8	73	45.3	75	59.6	75	47.6	75	41.7	45
50	69	73.0	69	74.1	69	56.2	69	41.9	72	64.1	72	45.2	72	42.8	74	56.5	74	45.4	74	41.0	50
55	67	67.6	67	68.8	67	52.9	67	39.0	70	61.1	70	42.8	70	40.3	72	53.4	72	43.3	72	39.3	55
60	65	62.7	65	63.8	65	50.0	65	36.4	68	57.6	68	40.6	68	37.9	71	50.4	71	41.3	71	36.8	60
65	62	58.3	62	59.6	62	47.5	62	34.0	66	54.4	66	38.6	66	35.6	68	47.7	68	39.3	68	34.7	65
70	60	54.5	60	55.8	60	45.1	60	32.0	64	51.7	64	36.9	64	33.5	67	45.3	67	37.7	67	32.8	70
75	58	51.1	58	52.4	58	43.0	58	30.1	62	48.9	62	35.2	62	31.7	65	43.1	65	36.2	65	31.0	75
80	55	47.8	55	49.3	55	41.2	55	28.5	59	46.1	59	33.6	59	30.0	63	40.9	63	34.7	63	29.4	80
85	52	44.1	52	46.3	52	39.6	52	27.0	57	43.8	57	32.3	57	28.3	61	38.9	61	33.2	61	27.9	85
90	49	40.2	49	42.4	49	38.0	49	25.6	55	41.4	55	30.9	55	27.0	59	37.2	59	32.0	59	26.5	90
95	46	36.8	46	38.9	46	36.6	46	24.4	52	38.5	52	29.7	52	25.5	57	35.1	57	30.9	57	25.3	95
100	43	33.7	43	35.7	43	35.3	43	23.3	49	35.3	49	28.6	49	24.1	54	32.9	54	29.9	54	24.2	100
110	36	28.2	36	30.3	36	33.0	36	21.4	44	29.9	44	26.7	44	21.7	50	29.2	50	27.9	50	22.0	110
120	27	23.7	27	25.9	27	29.1	27	19.8	38	25.5	38	25.0	38	19.7	45	25.7	45	25.9	45	19.9	120
130									29	21.6	29	23.5	29	17.8	39	21.8	39	23.4	39	18.1	130
140									16	18.4	16	20.3	16	16.5	32	18.6	32	21.2	32	16.5	140
150															23	16.1	23	18.7	23	15.3	150
160																					160
170																					170
180																					180
190																					190
200																					200
210																					210
Telescoping sequence %																					
Tel. 1	92		92		46		0		92		46		0		92		92		0		Tel. 1
Tel. 2	92		46		46		0		92		46		0		92		46		46		Tel. 2
Tel. 3	46		46		46		46		46		46		92		92		46		92		Tel. 3
Tel. 4	46		46		46		92		46		46		92		46		46		92		Tel. 4
Tel. 5	46		46		46		92		46		92		92		46		92		92		Tel. 5
Tel. 6	0		46		92		92		46		92		92		46		92		92		Tel. 6

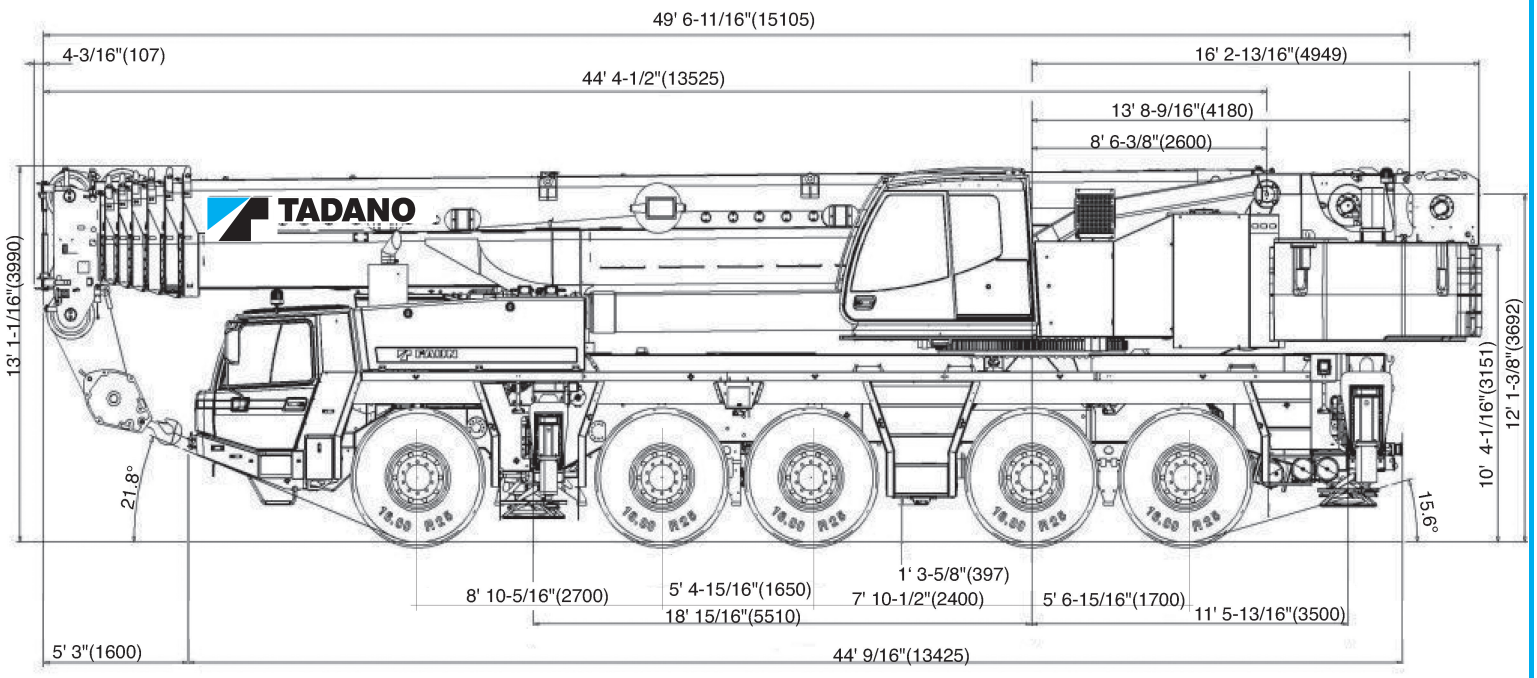
Working Radius (ft)	Lifting capacities in 1,000 lbs according per SAE J765 on telescopic boom On outriggers, 360° working area **Outrigger base 27.23 ft** Boom length (ft)														Working Radius (ft)
	180.4		180.4		180.4		194.2		194.2		208.0		223.1		
	° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		° ∠		
8															8
9															9
10															10
12															12
14															14
16															16
18															18
20															20
25															25
30	81	50.7	81	42.3	81	37.3									30
35	79	50.7	79	42.3	79	37.3	80	41.4	80	33.1					35
40	79	50.7	79	42.3	79	37.3	79	41.4	79	33.1	80	33.1	81	27.6	40
45	77	50.3	77	42.3	77	37.3	77	41.4	77	33.1	79	33.1	80	27.6	45
50	76	48.9	76	42.3	76	37.3	76	41.4	76	33.1	78	33.1	79	27.6	50
55	74	46.9	74	41.8	74	37.3	75	41.0	75	33.1	77	33.1	78	27.6	55
60	73	44.6	73	40.6	73	36.9	74	40.0	74	33.1	76	33.1	77	27.6	60
65	71	42.4	71	38.4	71	35.1	72	38.1	72	33.1	74	33.1	75	27.6	65
70	69	40.2	69	36.5	69	33.2	71	36.4	71	32.9	73	32.8	74	27.6	70
75	67	38.2	67	34.7	67	31.5	69	34.8	69	32.0	72	31.9	73	27.6	75
80	66	36.4	66	32.9	66	29.9	68	33.2	68	30.5	71	30.6	72	27.4	80
85	64	34.7	64	31.4	64	28.5	66	31.8	66	29.2	69	29.4	71	26.9	85
90	62	33.2	62	29.9	62	27.2	65	30.5	65	27.8	68	28.2	70	25.6	90
95	60	31.8	60	28.5	60	25.9	63	29.1	63	26.7	66	27.0	68	24.3	95
100	59	30.4	59	27.2	59	24.8	62	27.8	62	25.6	65	25.9	67	23.0	100
110	55	27.9	55	25.0	55	22.8	58	25.7	58	23.5	61	24.1	64	20.8	110
120	50	25.0	50	22.8	50	20.6	54	23.7	54	21.7	58	22.2	61	18.9	120
130	46	22.2	46	20.8	46	18.5	50	21.1	50	20.0	54	20.7	58	17.2	130
140	40	19.2	40	18.8	40	16.8	46	18.9	46	18.1	51	18.4	54	15.7	140
150	34	16.5	34	17.1	34	15.1	41	16.7	41	16.7	46	16.7	51	14.2	150
160	26	14.3	26	15.8	26	13.9	35	14.9	35	15.3	42	15.3	47	13.1	160
170			17	14.4	17	12.6	29	12.9	29	14.0	37	13.8	43	12.0	170
180							19	11.2	19	12.9	31	12.1	39	10.9	180
190											23	10.4	34	9.5	190
200													28	8.6	200
210													18	7.7	210
Telescoping sequence %															
Tel. 1	92		46		0		92		46		92		100		Tel. 1
Tel. 2	92		92		92		92		92		92		100		Tel. 2
Tel. 3	92		92		92		92		92		92		100		Tel. 3
Tel. 4	92		92		92		92		92		92		100		Tel. 4
Tel. 5	46		92		92		92		92		92		100		Tel. 5
Tel. 6	46		46		92		46		92		92		100		Tel. 6

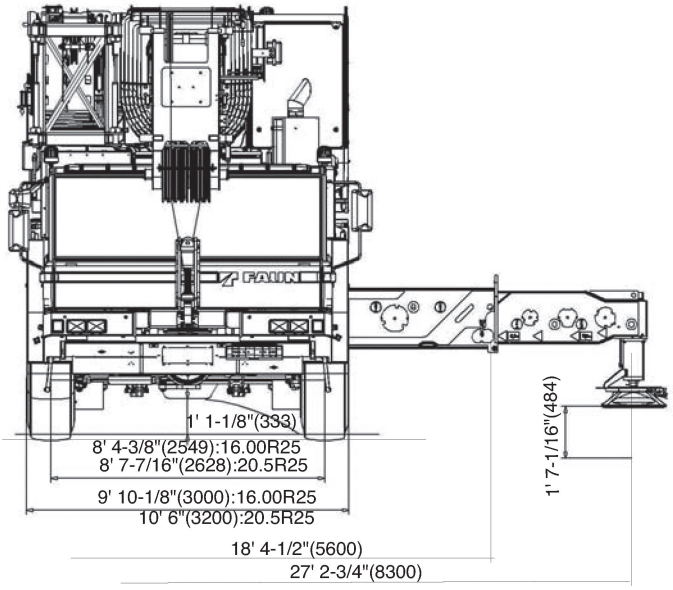
ATF220G-5

250 Ton Capacity (223.2 Metric Tons)

ALL TERRAIN CRANE

DIMENSIONS

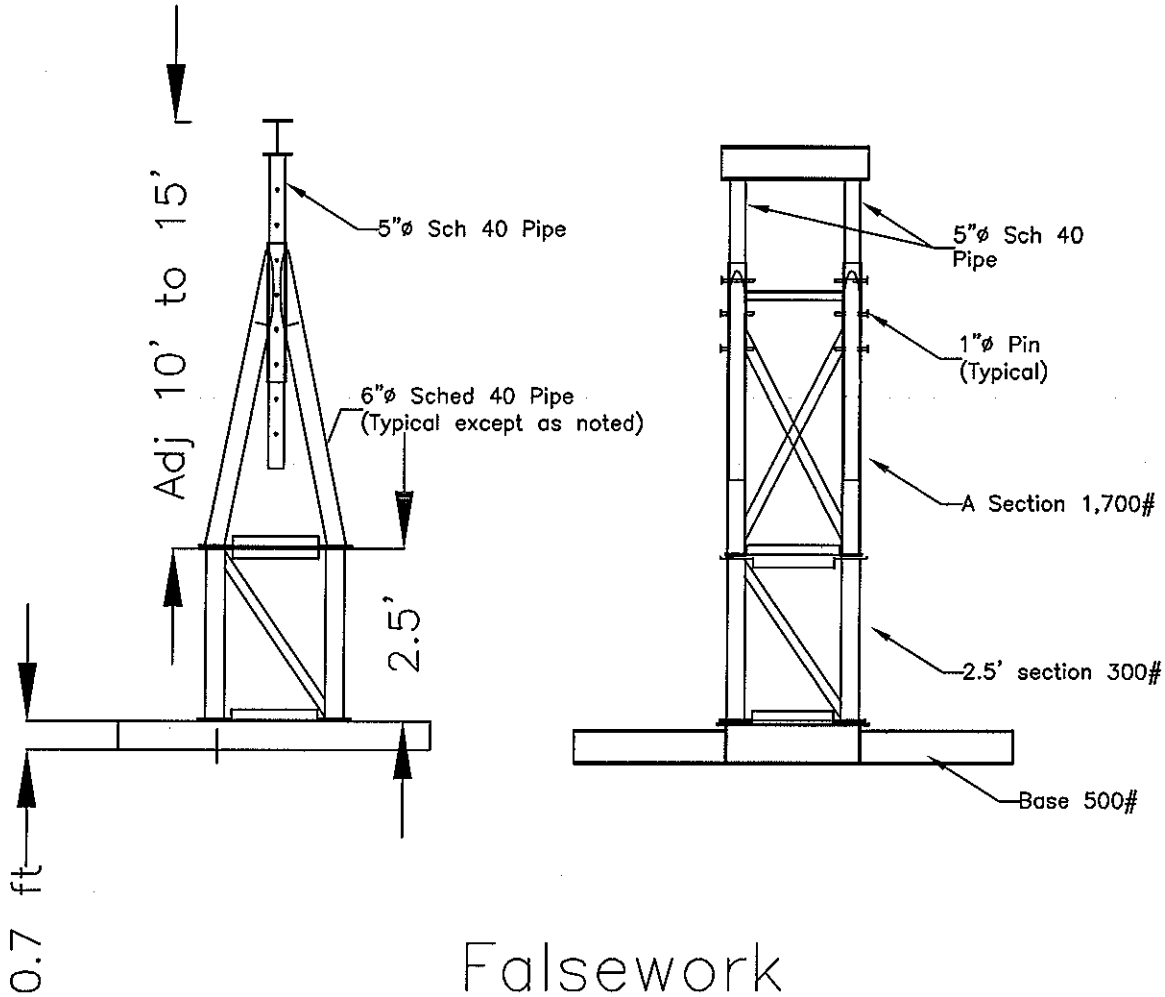




TURNING RADIUS

Steering	All wheel (10x8)
Carrier inside	17' 4-11/16" (5.30m)
Over carrier	35' 9-1/8" (10.90m)
Over boom	38' 11/16" (11.60m)
Over boom extension	40' 4-1/4" (12.30m)

Specifications are subject to change without notice.



Falsework Construction & Dimensions

N.T.S.

REVISIONS	
Sym.	Description
1	x
2	x

Remarks:
x
x

BURT CRANE & RIGGING
5 Veterans Memorial Drive
Green Island, N.Y. 12183
(518) 271-6858 800-282-2878
FAX (518) 271-6938

Title Of Drawing: Tower Details

File Name: FWK A + 2.5

Block Name: X:

DRAWING NUMBER

SK1

BEAMBOY V2.2 REPORT

Max Stress & Reactions w/ B Girder supported @ Pier & FWK

BEAM PROPERTIES

Beam Length = 70 ft.
Moment of Inertia = 56500 in^4
Modulus of Elasticity = 29000000 psi
Distance From Neutral Axis to Furthest Fiber = 28.2 in.

LOAD CONFIGURATION

Point Loads

Distributed Loads

Start=430 lb./ft., x=0 ft.; End=430 lb./ft., x=70 ft.

Moments

Supports

Simple support; 35 ft., Reaction=30100 lb.
Simple support; 20 ft., Reaction=0 lb.

SUPPORT @ FWK IS NOMINAL (SAY O.K. BY INSPECTION)

MAXIMUM VALUES

Maximum Bending Moment = -263000 lb.-ft. at x=35 ft.
Maximum Bending Stress = 1580 psi at x=35 ft.
Maximum Deflection = -0.139 in. at x=70 ft.
Maximum Slope = -0.0229 degrees at x=70 ft.

6/25/2013

$$l_b = 35\,ft * 12\,in/ft = 420\,in$$

$$F_b = \frac{12000}{l\,d/A_f}$$

$$d/A_f = 53/(2.75\,in * 16\,in) = 1.205$$

$$F_b = \frac{12000}{420\,in\,(1.205)} = 23.71\,ksi \gg 1.58\,ksi$$

$\therefore$ O.K.

BEAMBOY V2.2 REPORT

Stress with A & B girders Erected only B Girder diaphragms connected and no falsework

BEAM PROPERTIES

Beam Length = 155 ft.
Moment of Inertia = 34700 in^4
Modulus of Elasticity = 29000000 psi
Distance From Neutral Axis to Furthest Fiber = 27.9 in.

$d/A_s = 53\,in / (16\,in * 1.25\,in) = 2.65$

LOAD CONFIGURATION

Point Loads

Distributed Loads

Start=265 lb./ft., x=0 ft.; End=265 lb./ft., x=85 ft.
Start=305 lb./ft., x=85 ft.; End=305 lb./ft., x=120 ft.
Start=305 lb./ft., x=120 ft.; End=305 lb./ft., x=155 ft.

$l_b = 120\,ft - 24\,ft + 9 * \tan 20^\circ = 99.27\,ft$

$l_b = 99.27\,ft * 12\,in/Ft = 1191\,in$

Moments

Supports

Simple support; 0 ft., Reaction=14500 lb.
Simple support; 120 ft., Reaction=29300 lb.

$F_b = \frac{12,000}{1191\,in\,(2.65)} = 3.81\,ksi$

MAXIMUM VALUES

Maximum Bending Moment = 399000 lb.-ft. at x=54.9 ft.
Maximum Bending Stress = 3850 psi at x=54.9 ft.
Maximum Deflection = -0.977 in. at x=57.9 ft.
Maximum Slope = -0.13 degrees at x=0.0155 ft.

$3.81\,ksi \approx 3.85\,ksi$

$\therefore$ SAT OK.

6/25/2013

L. H. RUTLAND, JR. P.E.

27 MAIN STREET **BALLSTON LAKE, NY 12019**

TELE. (518) 399-6560 FAX (518) 399-0327 MOBILE (518) 527-6383

PROJECT: BURT BILT SUPPORT TOWERS (FALSEWORK)

DATE: _____ **PAGE:** 1 of 1

VERTICAL PIPE COLS.

5" ϕ @ 6' LONG (MAX) P_{ALL} = 83 K/COL.

2-COLS/SET-UP = 166 K MAX > 94.2 K (PINS)

ADJUSTING PINS

3-1" ϕ PINS/COL.

1-1" ϕ PIN - A307 - DBL SHEAR

ALL = 15.7 K

3 PINS/COL = 47.1 K/COL.

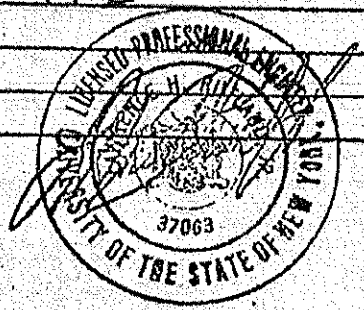
2-COLS = 94.2 K/TOWER SETUP (LIMITING COMPONENT)

PIPE SUPPORT BRACKETS

6" ϕ PIPE @ 10' LG (MAX)

P_{ALL} = 101 K > 94.2 K (PINS)

∴ MAX. ALL. CAP. OF FALSEWORK TOWER SETUP = 94.2 K



T. Buck Construction, Inc.

249 Merrow Road, Auburn, Maine 04210-8319
(207) 783-6223 * (FAX) 783-3970

July 1, 2013

RE: Comments on erection plan for structural steel.

Dear Chad:

The following comments were received with regards to the installation of the structural steel.

1. The bolts in the main members need to be fully installed before external restraints are released. Notes 4,7,11 on the first sheet of the appendix seem to contradict each other.
2. Bolts need to be torque in 5 days or removed and re-lubed.
3. Tower design needs to be stamped by a VT Professional Engineer.
4. What are the towers sitting on? The location appears to be in the channel on a rocky bottom. How will this be a solid footing? I did not see that the towers were designed for a lateral load of the water and debris hitting them? From a permit perspective is this allowed?

RESPONSE:

1. Each splice will have bolts or pins in every hole before the "external support system" is released. In this case, the false work will act as the support system for the splice between the "A" girders and "B" girders. The bolts will be installed as described in note 7 in the INFORMATION section on sheet EPGN (4 of 14) in the erection plan.

2. Bolts will be tightened as specified within 5 days or they will be "re-lubed."

3. The calculations in the plan show that the tower system is designed by L.H. Rutland, JR., PE. Mr Calderwood also did some calculations with regards to the tower and found the load to be "nominal" and should be OK by inspection.

4. The towers will be setting on a large steel plate set relatively level. Sand bags will be used under the plate to level it and ensure good bearing. The towers will not be installed in a "raging river" we are going to pay very close attention to the weather forecast as a small amount of rain can do some cause this river to rise rapidly.

Sincerely,

Brian R. Emmons
Project Manager

CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
PH. (207) 737-2007 FAX (207) 737-2008

July 2nd, 2013

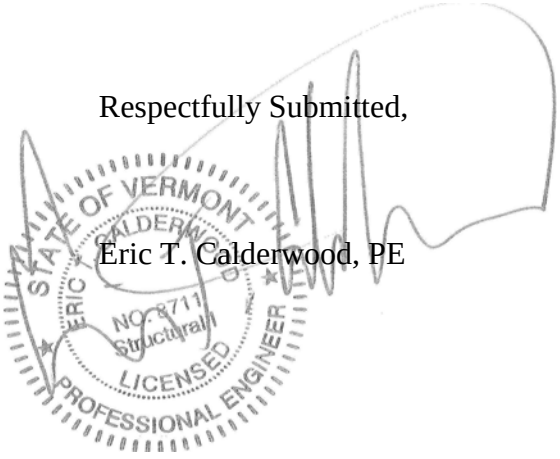
Brian Emmons
T Buck Construction, Inc.
249 Merrow Road
Auburn, Me. 04210

RE: Jamaica Vermont Tower Bent Location

To Whom it may Concern,

Based on current streamflow elevations and velocities it is recommended to locate the falsework towers to support the B Girders on the North side of the pier rather than the South side of the pier as originally shown. The towers should still be located 15' from the centerline of the pier. All diaphragms should be installed as per the original plan for the B-Girders. The erection sequence and procedure will remain as originally shown without any other modifications. The tower provides stability only for the B-Girders and has not been used in calculations of girder capacities once the A-Girders are connected, ie the Combined A & B Girders are analyzed as being supported only at the abutments and piers, therefor the location of the falsework can be changed without modifying the remaining erection plan.

Respectfully Submitted,



Eric T. Calderwood, PE